

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (previously presented): A device for switching ATM cells establishing a single path per virtual circuit, having N.R inputs and N.R outputs, N and R being two integers not less than two, the device comprising at least two stages, including an inlet stage comprising a plurality of matrices (21; 31; 411₁, ..., 411_R) and having R.N sets of Q outputs (213₁₁; 313₁₁; 413₁₁) and an outlet stage comprising a plurality of matrices (22; 33; 421₁, ..., 422₁, ...) and having R.N sets of Q' inputs (222₁; 332_{1,1}; 423_{1,1}),

DI characterized in that for the flow of data carried by any intermediate link (213_i, 222_j; 313_i, 332_j, 413_i, 423_j) that is part of the single path set up between an input and an output to be a subset of the incoming flux at that input and also a subset of the outgoing flux at that output, each input (212₁; 312₁; 412₁) of the inlet stage can be connected to an output of the inlet stage which can be selected only from Q outputs (213₁₁, ..., 213_{R1}; 313₁, ..., 313_{1R}; 413₁₁, ..., 413_{1R}) exclusively associated with that input; and

in that each output (223₁; 333_j; 442₁) of the outlet stage can be connected to an input of the outlet stage which can be selected only from Q' inputs (222₁₁, ..., 222_{1R}; 332₁₁, ..., 332_{R1}; 423₁₁, ..., 423_{1R}) of the outlet stage exclusively associated with that output; and

further configured so that the flow of data at each input of the inlet stage can be directed to each matrix of the outlet stage.

2. (original): A switching device according to claim 1 including only one inlet stage (21) and one outlet stage (22) each including N switching matrices, characterized:

in that, Q being equal to N, each matrix (211₁) of the inlet stage has R inputs (212₁, ..., 212_R) and R.N outputs (213₁₁, ..., 213_{1R}) organized into R sets of N outputs, each set corresponding to a respective one of the R inputs; in that each input (212₁) of that matrix can be connected to an output of that matrix which can be selected only from N outputs (213₁₁, ..., 213_{1R}) of the set of outputs corresponding to that input;

in that, Q' being equal to N, each matrix of the outlet stage has R outputs (223₁, ..., 223_R) and N.R inputs (222₁₁, ..., 222_{1R}); and in that each output (223₁) of that matrix can be connected to an input of that matrix which can be selected only from R.N inputs (222₁₁, ..., 222_{1R}) of that matrix; and

in that each of the N outputs (213₁₁, ..., 213_{1N}) of each set of outputs of the first stage is connected to an input (222₁₁, ...) of a respective one of the N matrices of the outlet stage.

3. (previously presented): A switching device according to claim 1 including an inlet stage (31), a central stage (32), and an outlet stage (3); characterized:

- in that, Q being equal to R , the inlet stage (31) comprises N matrices ($311_1, \dots$) each having R inputs ($312_1, \dots$) and R^2 outputs ($313_{11}, \dots$), those outputs being organized into R sets of R outputs each corresponding to one of said R inputs, and in that each input (312_1) of that matrix can be connected to an output of that matrix which can be selected only from R outputs ($313_{11}, \dots, 313_{R1}$) of the set of outputs corresponding to that input;

- in that the central stage (32) comprises R sets of R matrices ($321_{11}, \dots$) each having N inputs and N outputs, the R outputs of each set of outputs of the inlet stage being connected to inputs belonging to the same set of R matrices of the central stage; and

- in that, Q' being equal to R , said outlet stage (33) comprises N matrices ($331_1, \dots$) each of those matrices having R^2 inputs ($332_1, \dots$) and R outputs ($333_1, \dots$), those R^2 inputs being organized into R sets of R inputs, each set respectively corresponding to one of those R outputs; and in that each output ($333_1, \dots$) of that matrix can be connected to an input of that matrix which can be selected only from R inputs ($332_{11}, \dots, 332_{R1}$) of the set of inputs corresponding to that output; and in that the R inputs ($322_{11}, \dots, 322_{R1}$) of each set are respectively connected to R outputs respectively belonging to the R sets of matrices of the central stage (32).

4. (original): A switching device according to claim 1 including an inlet stage (411₁, ...), a central stage (414₁, ...), and an outlet stage (421₁, ...); characterized:

- in that Q and Q' are equal to R,
- in that the central stage includes R² matrices,
- in that the inlet stage and the outlet stage each comprise R.N switching matrices,
- in that the matrices of the inlet stage and the matrices of the central stage are organized into R sets (41₁, ...) each including N matrices of the inlet stage and R matrices of the central stage and the matrices of the outlet stage are organized into N sets (42₁, ..., 42_N) of R matrices;
- in that each of the R.N matrices (311₁, ...) of the inlet stage has a single input (412₁) and R outputs (413₁₁, ...),
- in that each of the R² matrices (414₁, ...) of the central stage has N inputs and N outputs, the N inputs being respectively connected to an output of each of the matrices (411₁, ..., 411_P) of the inlet stage that belong to the same set of matrices; and
- in that each of the R.N matrices of the outlet stage has R inputs (423₁) and a single output (422₁), those R inputs being connected to outputs respectively belonging to the R sets of matrices of the central stage and of the inlet stage.

5. (previously presented): A switching device according to claim 3, characterized in that
 $N = 2R^2$.

6. ~~(new)~~: The switching device according to claim 1, wherein each output for each matrix of the inlet stage is exclusively associated with an input of one of the outlet stage matrices.

7. (new): The switching device according to claim 1, wherein each matrix of the outlet stage is connected to receive data from each input of the inlet stage, and wherein data received at each inlet for the outlet stage matrix can be transmitted to any output of the output stage matrix.
